# Wisconsin Phosphorus Criteria for Streams/Rivers, Lakes/Reservoirs and Great Lakes

March 18th RTAG Meeting

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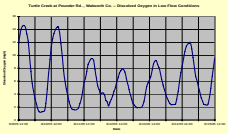
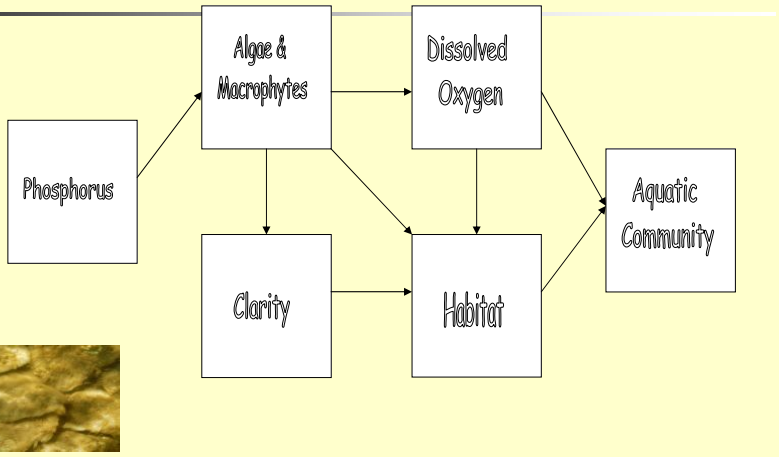





# Administrative Rules for Phosphorus Criteria

Working draft –

presented February 1, 2008 to Phosphorus Criteria Advisory Committee

## Application

- Streams and rivers
- Lakes and reservoirs
- Great Lakes (within Wisconsin jurisdiction)

## Streams and Rivers

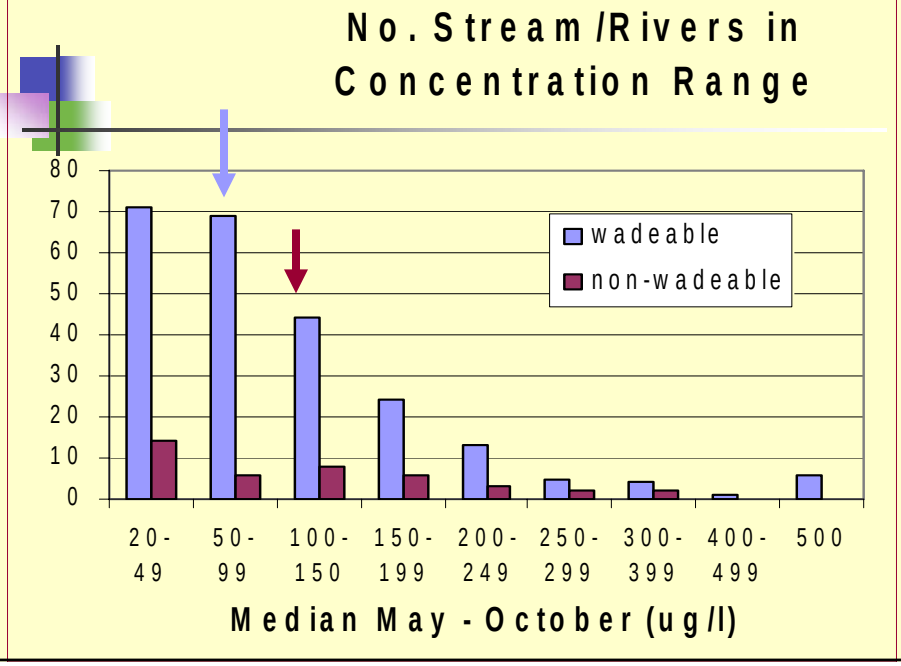
- Criteria developed to protect designated use of fish and aquatic life
- No differentiation based on temperature

## Streams and Rivers -- Criteria

- 105 ug/l for rivers **(likely to be changed to 100 ug/l)**
- 75 ug/l for streams
  - Everything with unidirectional flow, that is not a river

# Basis for River/Stream Criteria

- Based on Wisconsin study results
- Average of most significant correlation breakpoints/thresholds for water chemistry, benthic algae, aquatic insects and fish
  - Average of category averages
- Not highest or lowest breakpoints/thresholds
- Compared to other study results, where available



## Streams/Rivers byTP Concentration (ug/l)

| | No. streams/ rivers | % |
|---|---|---|
| Intermittent, headwater and mainstem streams | | |
| <50 | 71 | 29% |
| 50 to <60 | 22 | 9% |
| 60 to <75 | 20 | 8% |
| 75 or greater | 128 | 53% |
| subtotal | 241 | |
| | | |
| Rivers | | |
| <50 | 14 | 33% |
| 50 to <75 | 3 | 7% |
| 75 to <100 | 3 | 7% |
| 100 or greater | 22 | 52% |
| Subtotal | 42 | |

## Lakes and Reservoirs

- Criteria developed to protect designated uses of:
  - fish and aquatic life
  - recreation

## Subcategories

- Lakes:
  - Stratified – drainage lakes
  - Stratified – seepage lakes
  - Stratified – “2-story” fishery lakes
  - Not stratified – drainage lakes
  - Not stratified – seepage lakes
- Reservoirs
  - Stratified
  - Not stratified

## Subcategories (cont.)

- Impounded waters with less than 14 days residence time
  - For example – millponds
- Exclusions
  - Lakes and reservoirs <5 acres
  - Wetlands
    - Future EPA guidance

## Subcategories

- Lakes:
  - 30 ug/l -- Stratified – drainage lakes
  - 30 ug/l -- Stratified – seepage lakes
  - 15 ug/l -- Stratified – “2-story” fishery lakes
  - 40 ug/l -- Not stratified – drainage lakes
  - 40 ug/l -- Not stratified – seepage lakes
- Reservoirs
  - 30 ug/l -- Stratified
  - 40 ug/l -- Not stratified

## Criteria – Not stratified lakes and reservoirs

- Based on:
  - Limiting nuisance algal blooms <5% of summer
  - Preventing shift from macrophyte domination to algal domination
  - Protecting sport fish

## Criteria – Stratified drainage lakes and reservoirs

Based on:

- Limiting nuisance algal blooms ~5% of summer
- Protecting sport fish

## Criteria – Stratified seepage lakes

- 20 ug/l
- Lower than stratified drainage lakes due to very high water residence time

## Criteria – two story fishery lakes

Based on protecting dissolved oxygen in lower levels of lake

- Protect coldwater species
- Virtually eliminate nuisance algal blooms

## Criteria – Impounded waters <14 days water residence time

- For example, millponds
- Stream or river criteria based on the flowing water entering the impoundment
  - Either 105 (100) ug/l or 75 ug/l

## Great Lakes

- Open water
- Nearshore waters – Lake Michigan
  - Less than 10 meters in depth
- Green Bay

## Great Lakes

- Criteria to protect:
  - fish and aquatic life
  - recreational uses

## Great Lakes Criteria

- Lake Superior (too cold for nearshore)
  - 5 ug/l (IJC)
- Lake Michigan open water
  - 7 ug/l (IJC)
- Lake Michigan nearshore
  - 7 ug/l (phosphorus – Cladophora modeling)
- Green Bay (placeholder)

## Site-Specific Criteria

- An option for higher or lower values
- Allows specific conditions to be given greater consideration
- Probably most applicable to reservoirs and 2-story lakes, but could be applied to any surface water